Maine Forestry Best Management Practices Use and Effectiveness 2005

Executive Summary

Department of Conservation
Maine Forest Service
22 State House Station
Augusta, Maine 04333

Forest Policy and Management Division

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Control of water and sediment before, during, and after timber harvests is accomplished most efficiently and effectively by applying underlying principles of *Best Management Practices* (BMPs). While best management *practices* such as water bars, diversion ditches, and broad based dips, control water flow by slowing it down and spreading it out, application of these practices based upon *principles* such as pre-harvest planning, anticipating site conditions, and minimizing and stabilizing exposed soil, achieves the greatest protection of water resources in forested settings.[1]

This report presents findings from analysis of nine months of data collected between April 2005 and December 2005. The data tests for the first time a regional method based upon BMP principles, "Best Management Practices Implementation Monitoring Protocol," a project of the Northeastern Area Association of State Foresters' Water Resources Committee.

MFS has conducted random, statewide monitoring of BMPs on timber harvesting operations since March 2000. The objective of this ongoing effort is to assess the use and effectiveness of BMPs in Maine. MFS uses BMP monitoring to seek continual improvement of monitoring methods, identify trends for targeting technical assistance, and focus educational outreach efforts to loggers, foresters and landowners. As BMPs are voluntary measures to protect water quality, BMP monitoring is not used to assess compliance with or enforcement of laws and rules.

MFS continues this monitoring effort as a part of regular field activities and expects to generate subsequent reports. Improved monitoring methods make it difficult to compare specific year to year data. However evaluation of BMP use and effectiveness has remained constant and continues to show improvement. BMPs were used appropriately at 41% of the monitored harvests in 2000. In 2005, 79% of the stream crossings and 92% at the approaches to the crossing had appropriate use of BMPs. Conversely, BMPs were not applied at 25% harvest in 2000. 2005 data shows BMPs were not applied at only 4% of the crossings and 6% of the approaches, an approximate five-fold improvement over five years.

For this reporting period, key findings regarding the use and effectiveness of BMPs are:

- **When applied appropriately, BMPs avoided soil movement into waterbodies at 92% of the approaches to stream crossing structures and 79% of the crossing structures themselves.**
- **Timber harvests that extended into riparian areas retained 80% average forest canopy crown closure.**

[1] Ryder, R., Edwards, P. J. 2005. Development of a Repeatable Protocol for Performance-Based Monitoring of Forestry Best Management Practices: U.S. Department of Agriculture, Forest Service, General Technical Report NE-335, 15 pp.

- **At sites where BMP principles and practices were not applied appropriately in sediment reached the water at 25% of the approaches and 44% of the stream crossings.**
- **Forty-five percent of harvest sites with water present in the immediate harvest area did not have stream crossings.** Harvest planning that avoids crossing waterbodies is a valid BMP.

This study also developed additional information on the context in which BMPs are applied:

- **The predominant permanent crossing structure type is single culverts, of which 67% had *scouring* within 100' of the outlet.** Scouring is indicative of an undersized structure that restricts normal stream channel flow, often inhibiting aquatic organism passage. This data supports MFS's current educational and technical assistance focus on permanent innovative crossing structures and the introduction of temporary crossing structure options.
- **Harvests with contractual assignment of BMP responsibilities to either a forester or logger had significantly less amounts of sediment reach the waterbody.** Defining objectives and assigning responsibilities for BMPs are key *principles* for achieving desired water resource protection outcomes.

Of Special consideration when reviewing facts and figures within this report:

2005 Recorded as the "Wettest Year on Record" for Maine[2].

Caribou, ME	Wettest year on record with 54.21"
Concord, NH	Wettest year on record with 57.17"
Portland, ME	Wettest year on record with 66.45"

MAINE State record for wettest year on record set at Acadia with 76.13"

Precipitation events and amounts during 2005 presented extraordinary operational challenges to forest practitioners in Maine. Many loggers and foresters experienced significant reductions in annual output as they curtailed operations in order to reduce environmental risks associated with saturated soils and crossing streams at or above *bankfull* levels.

[2]National Oceanic and Atmospheric Administration , Data Climate Center: year2005US-climate-assessment

Comparison of BMP Use from Previous Reporting Periods

Data collected from MFS continues to indicate increased use and effectiveness of BMP implementation. Evaluation methodology has improved with use the Regional Protocol with separate evaluations for the crossing and the approaches to the waterbody. Previous reporting periods did not specify potential sources of sediment.

Reporting Period	2000 - 2001	2001-2003	2005
Number of harvest with waterbodies (n)	181	288	102
BMPs used appropriately	41%	52%	79% at crossings 92% at approaches
BMPs not applied	25%	8%	4% at crossings 6% at approaches

Acknowledgements

Landowner permission was obtained prior to conducting BMP surveys. Often landowners, loggers, and foresters requested they accompany MFS field staff during site evaluations. With over 90% positive response to MFS survey requests, it is evident that Maine landowners are sincere about conducting timber harvesting practices which protect and enhance water quality. MFS is delighted with the high rate of landowner participation and their engagement with BMP monitoring, without which this comprehensive report would not be possible.

MFS also extends appreciation to the Massachusetts Department of Conservation and Recreation, University New Hampshire Cooperative Extension Service, and New York City's Watershed Agricultural Council who acted as quality control teams assuring consistent application of the monitoring protocol by MFS field staff.

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Absent significant changes in staffing levels or bureau priorities, MFS expects to continue BMP monitoring indefinitely and to report periodically on the most recent data utilizing the U.S. Forest Service - Northeastern Area, Best Management Practices (BMP) Protocol: Monitoring Implementation and Effectiveness for Protection of Water Resources.